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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,475	08/20/2003	Craig A. Campbell	G00348/US	5951
35758	7590	11/25/2005		
GKN DRIVELINE NORTH AMERICA, INC 3300 UNIVERSITY DRIVE AUBURN HILLS, MI 48326				
			EXAMINER JULES, FRANTZ F	
			ART UNIT	PAPER NUMBER
			3617	

DATE MAILED: 11/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/644,475

Applicant(s)

CAMPBELL, CRAIG A.

Examiner

Frantz F. Jules

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 5-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-2, 5-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 5-13, 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kragtwijk in view of Jaekel (US 6,543,266) and Breese et al (US 5,983,497).

Kragtwijk discloses an energy absorbing unit comprising an elongated hollow cylindrical body (4) and a reduced profile intermediate portion (2) having a reduced diameter as compared to the body and defining two transition areas (at section 8 and 6) one at each end thereof between the intermediate portion and the body, as seen in fig. 1, wherein The energy absorbing member being formed through a forging or extruding process. Kragtwijk teach all the limitations of claims 1-2, 6-9, 11-19 except for a method of making a collapsible propeller shaft comprising the step of spin cold forming a reduced profile intermediate portion a hollow cylindrical body. The general concept of applying a collapsible or transition area to a drive shaft is well known in the art as illustrated by Jaekel which discloses the teaching of a collapsible drive shaft comprising a transition area. Also, the general concept of spin cold forming an intermediate portion in a hollow cylindrical body is well known in the art as illustrated by Breese et al which discloses the

teaching of spin cold forming a reduced profile intermediate portion in a hollow cylindrical body, see col 6, lines 5-18. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kragtwijk to apply a collapsible or transition area to a drive shaft as taught by Jaekel in order to reduce the danger of the shaft breaking free from its mountings and protruding into the passenger compartment during a collision as disclosed in col 1, lines 10-14. In addition, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kragtwijk to include the use of spin cold forming a hollow cylindrical body in his advantageous method of forming a propeller shaft in order to provide for a drive shaft that avoids clearance issues or interference with other components while reducing the weight of the shaft as disclosed in col 3, lines 2-12.

Claim 5

Regarding using an intermediate portion length of between 5 and 30 percent of the length of the propeller shaft as recited in claim 5, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Breese et al Kragtwijk and Jaekel to include the use of an intermediate portion length of between 5 and 30 percent of the length of the propeller shaft in his advantageous system, as collapsible area design is a common and everyday occurrence throughout the propeller shaft design art and the specific use of an intermediate portion length of between 5 and 30 percent of the length of the propeller shaft would have been an obvious matter of design preference depending upon such factors as the weight of the magnitude of the load imposed on the shaft, the yield strength of the shaft material, the targeted

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magnitude of the absorption; the ordinarily skilled artisan choosing the best stress profile corresponding to a particular loading imposed on the propeller shaft which would most optimize the cost and performance of the device for a particular application at hand, based upon the above noted common design criteria.

Claim 10

Regarding using an intermediate portion length of between 5 and 30 percent of the length of the propeller shaft as recited in claim 10, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kragtwijk, Jaekel and Breese et al to include the use of an intermediate portion length of between 5 and 30 percent of the length of the propeller shaft in his advantageous system, as collapsible area design is a common and everyday occurrence throughout the propeller shaft design art and the specific use of an intermediate portion length of between 5 and 30 percent of the length of the propeller shaft would have been an obvious matter of design preference depending upon such factors as the weight of the magnitude of the load imposed on the shaft, the yield strength of the shaft material, the targeted magnitude of the absorption; the ordinarily skilled artisan choosing the best stress profile corresponding to a particular loading imposed on the propeller shaft which would most optimize the cost and performance of the device for a particular application at hand, based upon the above noted common design criteria.

Response to Arguments

3. Applicant's arguments filed 12/22/00 have been fully considered but they are not persuasive.

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A. Summary of applicant's argument

In the amendment, applicant traversed the rejection of the newly amended claims 1, 3-8, 11, 16-17, 20 for the following reasons:

1. The independent claims 1, 8 and 14 are non-obvious by the combination rejection of Breese et al in view of Jaekel and Kragtwijk due to lack of motivation or suggestion to combine the references.
2. The combination rejection of the claim is improper because Kragtwijk only disclose forging or extrusion and does not disclose two transition areas, as a result the references cited in the rejection cannot be properly combined to yield applicant's invention.

B. Response to applicant's argument

1. Applicant's argument no 1 is moot in view of the withdrawal of the rejection of the claims over the Breese et al reference over the Jaekel and Kragtwijk.

In response to applicant's argument that there is no suggestion or motivation to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, an ordinary skill in the art would have been motivated to incorporate the teaching of a collapsible shaft by Jaekel and that of forming a transition section by spin forming process by Breese et

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al into Kragtwijk in order to achieve among others the benefit of achieving a propeller shaft having energy absorbing capability while having increase resistance to fatigue stress.

2. Regarding applicant's argument number 2, it should be noted that Kragtwijk discloses an energy absorbing unit comprising two transition areas as explained above. The combination rejection is simply based on applying the energy absorbing unit in a drive shaft as taught by Jaekel which discloses application of a drive shaft as energy absorbing member. Also, the rejection is simply based on reducing an intermediate section of a shaft member by spinning as taught by Breese et al.

Applicant's argument that the combination rejection is improper as Kragtwijk is formed by forging or extrusion which teach away from spin-forming process is not understood as it is well known in the art of forming a shaft to apply spinning process to reduce the diameter of a metal shaft as illustrated by Breese et al. A person of ordinary skill in the art would have been motivated to use the teaching of reducing a diameter of a shaft by cold spinning as well as applying the energy absorbing member to a shaft into Kragtwijk to achieve a propeller shaft as the claimed invention for the various reason listed above.

Conclusion

4. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

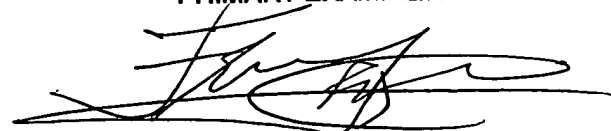
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frantz F. Jules whose telephone number is (703) 308-8780. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph S. Morano can be reached on (703) 308-0230. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Frantz F. Jules
Primary Examiner
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**FRANTZ F. JULES
PRIMARY EXAMINER**

A handwritten signature in black ink, appearing to read 'Frantz F. Jules', is written over the printed name and title.

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November 18, 2005